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中華民國專利證書

新型第 一八二九六六 號

新 型 名 稱：散熱片卡接結構

專 利 權 人：廖文盛

創 作 人：廖文盛

專利權期間：自中華民國 九十年 十二月 十一 日
至 一〇二年 五 月 十七 日止

上開新型業經專利權人依專利法之規定取得專利權

經濟部智慧財產局

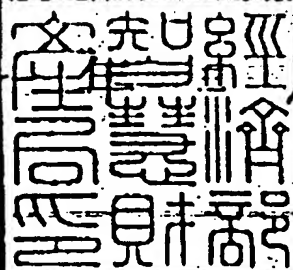
局

長

陳 明 邦

中華民國

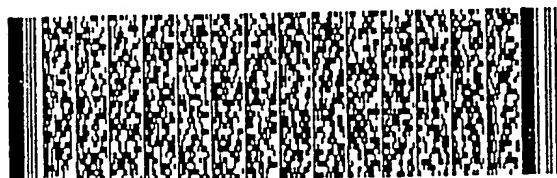
二十五年 日



四、中文創作摘要 (創作之名稱：散熱片卡接結構)

一種「散熱片卡接結構」，該散熱片於上端緣設有兩分開之短折邊，其下端緣則彎設整條式短折邊；上述各短折邊角落與散熱片交接處沖設一長槽孔，沿短折邊之端部則設有一小寬度頸部，以及在該頸部前端沖折勾部；該等頸部及其前端勾部設為小於長槽孔寬度，使兩兩併接散熱片可藉其預設頸部及其勾部接合於相鄰散熱片之長槽孔中。從而形成一種改良之散熱片卡接結構，其能以連續沖模製成，並構成更良好之穩固接合定位。

英文創作摘要 (創作之名稱：)



本案已向

國(地區)申請專利

申請日期

案號

主張優先權

無

15008

五、創作說明 (1)

本創作有關一種「散熱片卡接結構」，尤指每一散熱片均於四角落沖設卡接構造，使每一鄰接散熱片可彼此接合成排。

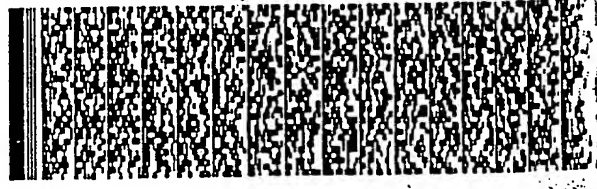
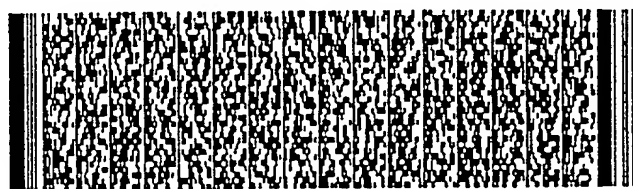
按，現今常見之散熱裝置大都是以成排散熱片所構成，譬如以合適之金屬材料（如鋁料）一體成型，或者是個別成型散熱片，然後將多數散熱片組合成排狀。

要將多數個別製成之散熱片組合成排，通常牽涉到散熱片製成後之額外加工步驟，以及其他組接構件，製造上較麻煩，成本亦較高。因此，乃有人在兩兩相鄰散熱片之間設有相對之凹凸點，使散熱片之間可彼此相接定位成排，但其接合結構非常不穩定而易於脫落，相當不理想。

本創作之目的即在提供一種「散熱片卡接結構」，其在一適當大小面積之散熱片上下端緣分別預設短折邊，而可於該等短折邊之角落分別沖設勾部，以及在各短折邊與散熱片交接處之相關位置沖設長槽孔。從而使各角落形成能以連續沖模製成之卡接結構，並使所有散熱片能快速而穩固的組接成排狀，此為本案之主要創作動機。

本創作之新穎性及其他特點將於配合以下附圖較佳實施例之詳細說明而趨於明瞭。

首先請參閱第1圖，本創作之單一散熱片（10）以金屬薄板材料製成適當大小之面積。於圖示較佳實施中，該散熱片（10）之上端緣（11）設有兩分開之短折邊（13）、（14），其下端緣（12）則彎設一整條式之短折邊（15）。藉此，而可在該等上下短折邊（

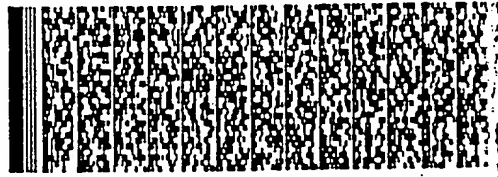
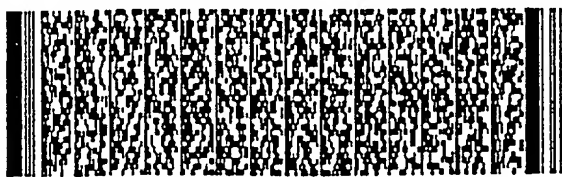


1 3)、(1 4)、(1 5) 角落沖設所需之卡接結構 2 0)。

如第 3 圖所示，以其中一角落之卡接結構 (2 0) 例，其大致包括在短折邊 (1 3) 與散熱片 (1 0) 之接處沖設一長槽孔 (2 1)，沿短折邊 (1 3) 之端部設有一小寬度頸部 (2 2)，然後在該頸部 (2 2) 前沖折勾部 (2 3)、(2 4)。該等沖折勾部 (2 3) (2 4) 之寬度略小於長槽孔 (2 1) 之橫向寬度，同為方便插接引入勾部 (2 3)、(2 4)，則其端緣 (5)、(2 6) 最好設為斜弧狀。

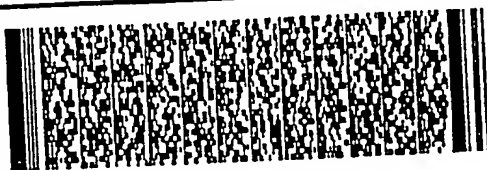
現請參閱第 4 ~ 6 圖，本創作依上述之卡接結構能連續沖模方式製成，其包括先在散熱片 (1 0) 各角落平片狀沖設出如上述之長槽孔 (2 1)、頸部 (2 2) 勾部 (2 3)、(2 4) (參閱第 4 圖)，然後彎折出部 (2 3)、(2 4) (參閱第 5 圖)，再將該卡接結構彎折九十度 (參閱第 6 圖)，即完成整個加工作業程序。

如第 2、6、7 圖所示，本創作散熱片 (1 0) 併時，係使其各角落之頸部 (2 2) 及其勾部 (2 3) (2 4) 沖折插入相鄰散熱片 (1 0 0) 之相鄰角落長 (2 1 0)，使預設勾部 (2 3)、(2 4) 成為水之定位勾件，即可將散熱片 (1 0)、(1 0 0) 併如第 2、6 圖所示)，進一步依序將多數散熱片 (1 0)、(1 0 0) 組合成第 7 圖所示之排狀，供安裝於散表面。



五、創作說明 (3)

本創作因而能以連續沖模方式製出散熱片之卡接結構，使散熱片彼此間能更穩固的結合在一起，有效防止其脫落。就此一散熱片之穩定接合及易於自動加工製出而論，確具有產業上利用價值，爰依法提出新型專利申請。

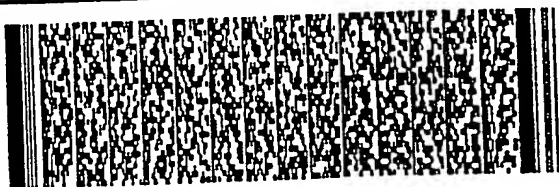


圖式簡單說明

- 第 1 圖係本創作較佳實施例立體圖；
第 2 圖係第 1 圖雙片拼接示意圖；
第 3 圖係第 1 圖之局部角落放大圖；
第 4 圖係第 3 圖之沖折成型前立體圖；
第 5 圖係第 4 圖之接續沖折動作圖；
第 6 圖係第 5 圖之接續沖折動作及其拼接狀態放大圖
第 7 圖係第 1 圖拼接成排之斷面剖視圖。

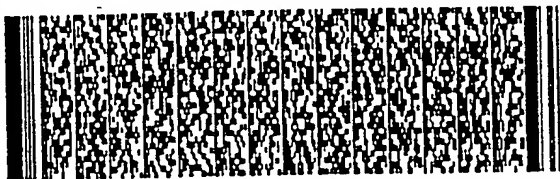
代號說明：

- | | |
|----------------------|-----------------------|
| (1 0) 散熱片 | (1 1) 上端緣 |
| (1 2) 下端緣 | (1 3) 、 (1 4) 短折邊 |
| (1 5) 短折邊 | |
| (2 0) 卡接結構 | (2 1) 長槽孔 |
| (2 2) 頸部 | (2 3) 、 (2 4) 勾部 |
| (2 5) 、 (2 6) 端緣 | |
| (1 0 0) 散熱片 | |
| (2 1 0) 長槽孔 | |



六、申請專利範圍

1. 一種「散熱片卡接結構」，該散熱片於上端緣設有兩開之短折邊，其下端緣則彎設整條式短折邊；上述各折邊角落與散熱片交接處沖設一長槽孔，沿短折邊之部則設有一小寬度頸部，以及在該頸部前端沖折勾部，該等頸部及其前端勾部設為小於長槽孔寬度，使兩兩接散熱片可藉其預設頸部及其勾部接合於相鄰散熱片長槽孔中。
2. 如申請專利範圍第1項所述之「散熱片卡接結構」，中，該等勾部設有斜弧狀端緣。



TAIWAN PATENT PUBLICATION [19][12]

[11] Announcement Serial Number: 468931

[44] Dec. 11, 2001

Utility Model

[51] Int.Cl⁰⁷: H05K5/02

[54] Title: Engaging Structure For Thermal Fin

[21] Patent Number: 090208102

[22] The Date of Filing: May 18, 2001

[72] Inventor: 廖文圣

[71] Patentee: 廖文圣

Engaging Structure For Thermal Fin

BACKGROUND OF THE INVENTION

1. Field of the invention

The present invention relates to an engaging structure for a thermal fin, and in particular relates to an engaging structure provided at four corners of a thermal fin so that adjacent thermal fins can be engaged with one another in a row.

2. Description of the Related Art

The conventional heat dissipators are generally formed by thermal fins in a row, for example, the heat dissipators are formed integrally from suitable material such as aluminium, or the heat dissipators are formed by combining thermal fins manufactured individually.

It will need additional processes and other members for combining after the thermal fins have been manufactured to combine the fins manufactured individually into a row, which will result complicated process and high cost. Thus, concave and convex points corresponding to each other are provided in adjacent thermal fins so that the thermal fins can be coupled with one another in a row. However, the coupling is undesiredly unstable so that the thermal fins tend to separate from one another.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide an engaging structure for a thermal fin in which short edgefolds are provided at upper and lower side edges of the thermal fin of suitable area, hook portions are formed by punching at a corner portion of the short edgefolds, and long cuts are punched at portions corresponding to the hook portions between the short edgefolds and the thermal fin, so that at the corner portions can be formed an engaging structure which can be formed by progressive die and with which all thermal fins can be combined rapidly and stably in a row.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other features and advantages of the present invention will become more

apparent by describing in detail exemplary embodiments thereof with reference to the attached drawings in which:

Fig. 1 is a perspective view according to the preferred embodiment of the present invention,

Fig. 2 is a schematic view showing the engagement of two thermal fins shown in the fig. 1,

Fig. 3 is an enlarged view showing a part of the thermal fin shown in the fig. 1,

Fig. 4 is a perspective view showing the part in fig. 3 before being bent,

Fig. 5 is a view showing bending process after the process in the fig. 4,

Fig. 6 is an enlarged view showing bending process after the process in the fig. 5 and engagement of the thermal fins,

Fig. 7 is a sectional view showing the thermal fins, shown in fig. 1, engaged in a row.

In the drawings, reference numeral 10 indicates a thermal fin, 11 an upper side edge, 12 an lower side edge, 13 and 14 short edgefolds, 15 a short edgefold, 20 engaging structure, 21 a long cut, 22 a neck portion, 23 and 24 hook portions, 25 and 26 end edges, 100 a thermal fin, and 210 a long cut.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in Fig. 1, a thermal fin 10 according to the present invention is formed from a metal thin plate of appropriate area. In the preferred embodiment shown in the drawings, the thermal fin 10 is provided with two separate short edgefolds 13, 14 on an upper side edge 11 thereof and a whole-length type short edgefold 15 formed by bending on the lower side edge 12 thereof. Thereby, engaging structures 20 can be formed at corner portions of the short edgefolds 13, 14 and 15.

As shown in Fig. 3, an engaging structures 20 at a corner portion is illustrated. A long cut 21 is punched at the junction portion between a thermal fin 10 and a short edgefold 13, a neck portion 22 with small width is provided at the ends of each of the short edgefold 13, and hook portions 23, 24 are bent at the leading end of the neck portion. The hook portions 23, 24 have a width slightly less than that of the long cut 21. At the same time, the hook portions are provided with end edges 25 and 26 having an oblique arc shape for convenient insertion of the hook portions 23, 24.

As shown in Figs. 4-6, the above thermal fins according to the present invention can be formed by progressive die, in which long cuts 21, neck portions 22, hook portions 23, 24 are formed in a thermal fin by punching (referring to Fig. 4), and then the hook portions 23, 24 are bent (referring to Fig. 5). After that, the engaging structure is bent by 90 degrees (referring to Fig. 6), completing all manufacturing processes.

As shown in Figs. 2, 6 and 7, the thermal fins according to the present invention are engaged together by bending the neck portions 22 and hook portions 23, 24 at the corner portions and inserting them into the long cuts 210 at corner portions of an adjacent thermal fin 100 so that the hook portions 23, 24 function as a positioning hook member. Thus, the thermal fins 10 and 100 can be engaged together, as shown in Figs. 2 and 6. A plurality of thermal fins 10 and 100 are further in sequence combined in a row as shown in Fig. 7 to be mounted on cooling surface.

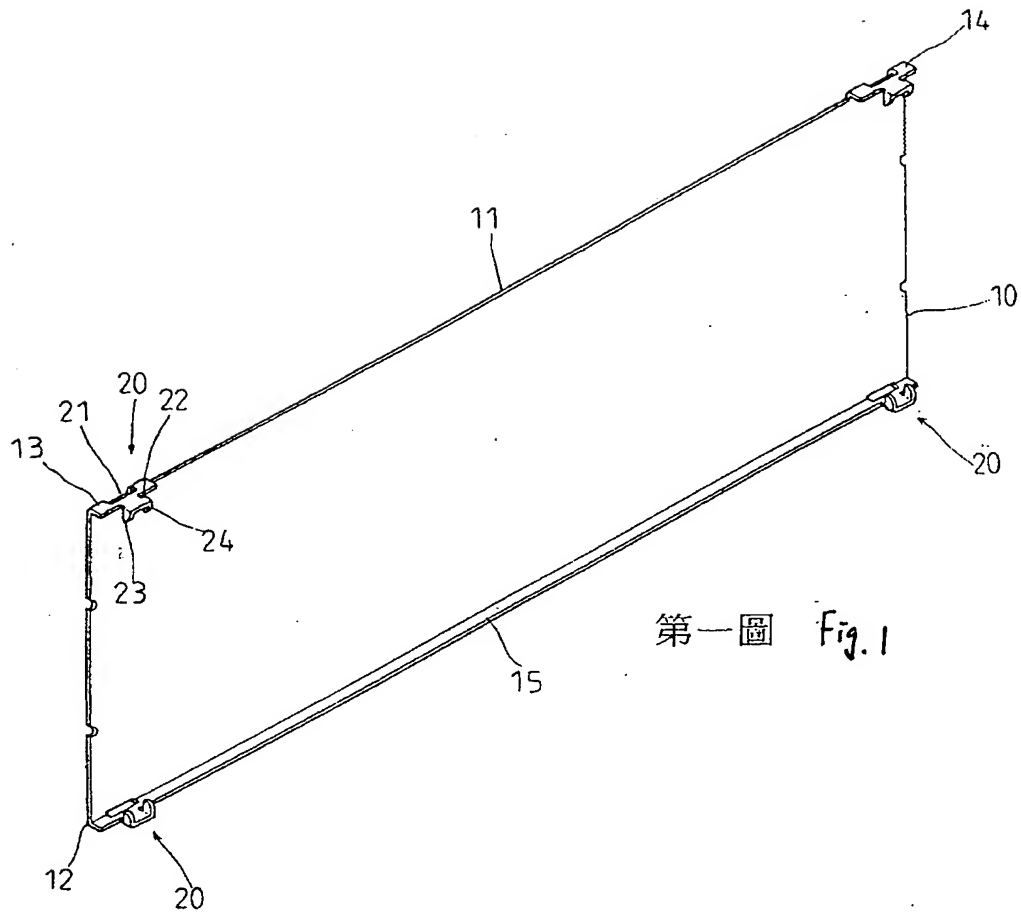
Therefore, the engaging structure for thermal fins according to the present invention can be formed by progressive die, so that the thermal fins can be combined together stably to effectively prevent detachment of the thermal fins. The engaging structure for thermal fins is advantageous in that the thermal fins can combined stably and they are easy to be manufactured automatically.

Claims

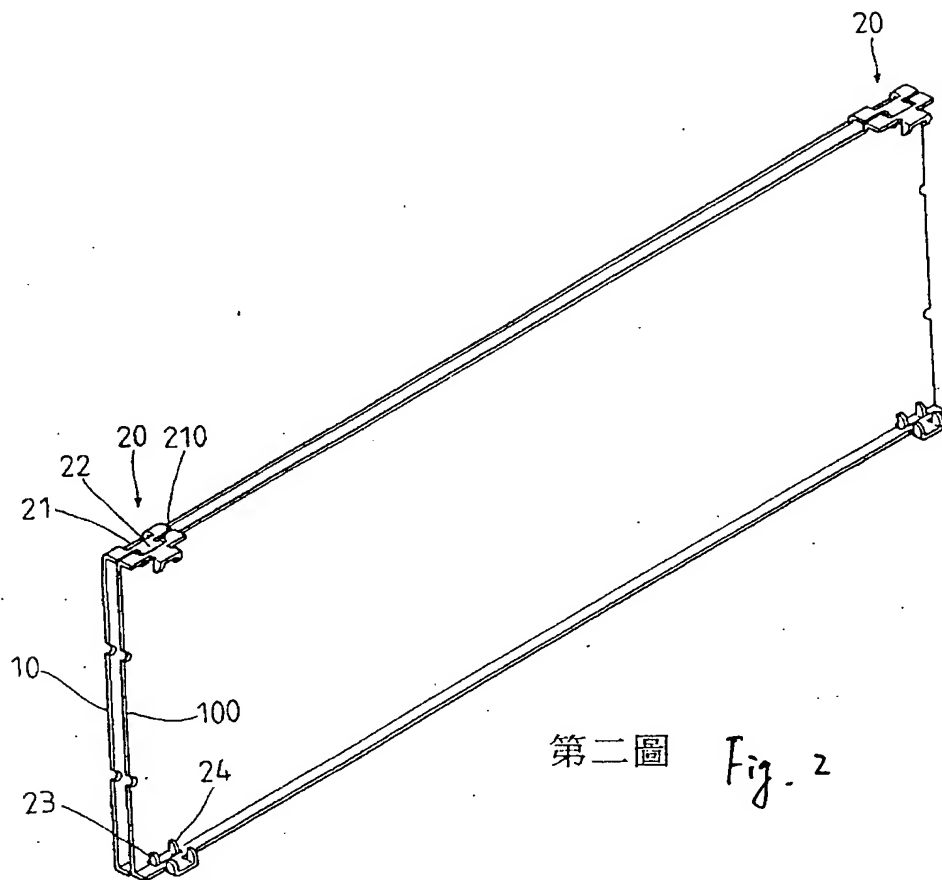
1. An engaging structure for a thermal fin, the thermal fin is provided with two separate short edgefolds on an upper side edge thereof and a whole-length type short edgefold formed by bending on the lower side edge thereof; a long cut is punched at the junction portion between the thermal fin and each of the short edgefolds, a neck portion with small width is provided at the ends of each of the short edgefolds, and hook portions are bent at the leading end of each of the neck portion, the neck portion and the hook portions at the leading end of the neck portion have a width less than that of the long cut, so that every two thermal fin to be engaged with one another can be coupled together by engaging the neck portions and the hook portions thereof in the long cuts of the adjacent thermal fin.

2. The engaging structure for a thermal fin according to the claim 1, characterizing in that the hook portions are provided with end edges having an oblique arc shape.

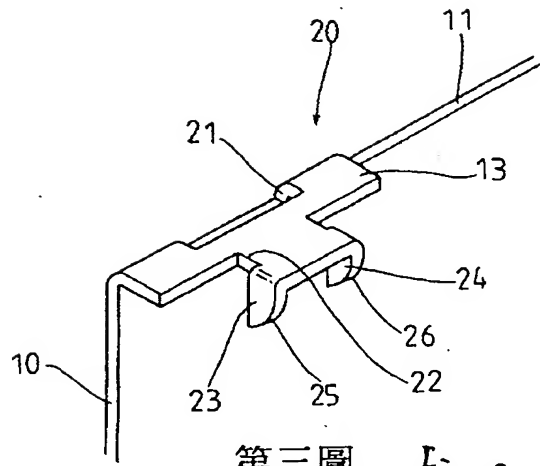
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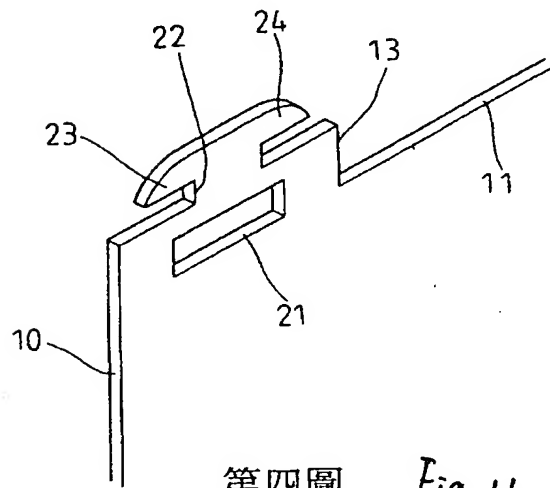
第一圖 Fig. 1



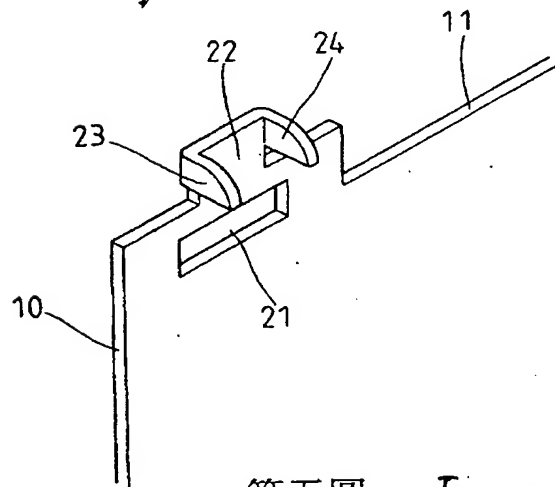
第二圖 Fig. 2



第三圖 Fig. 3

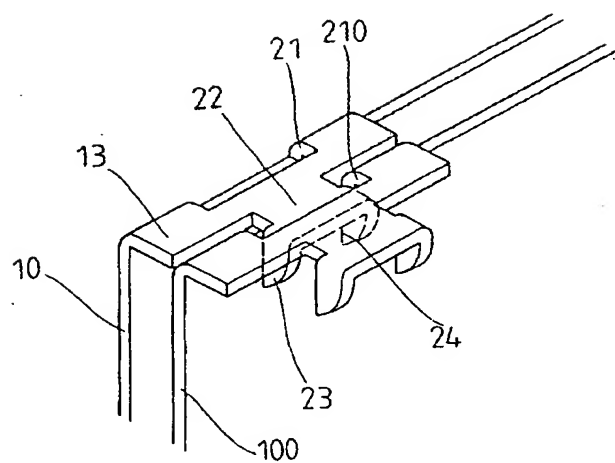


第四圖 Fig. 4

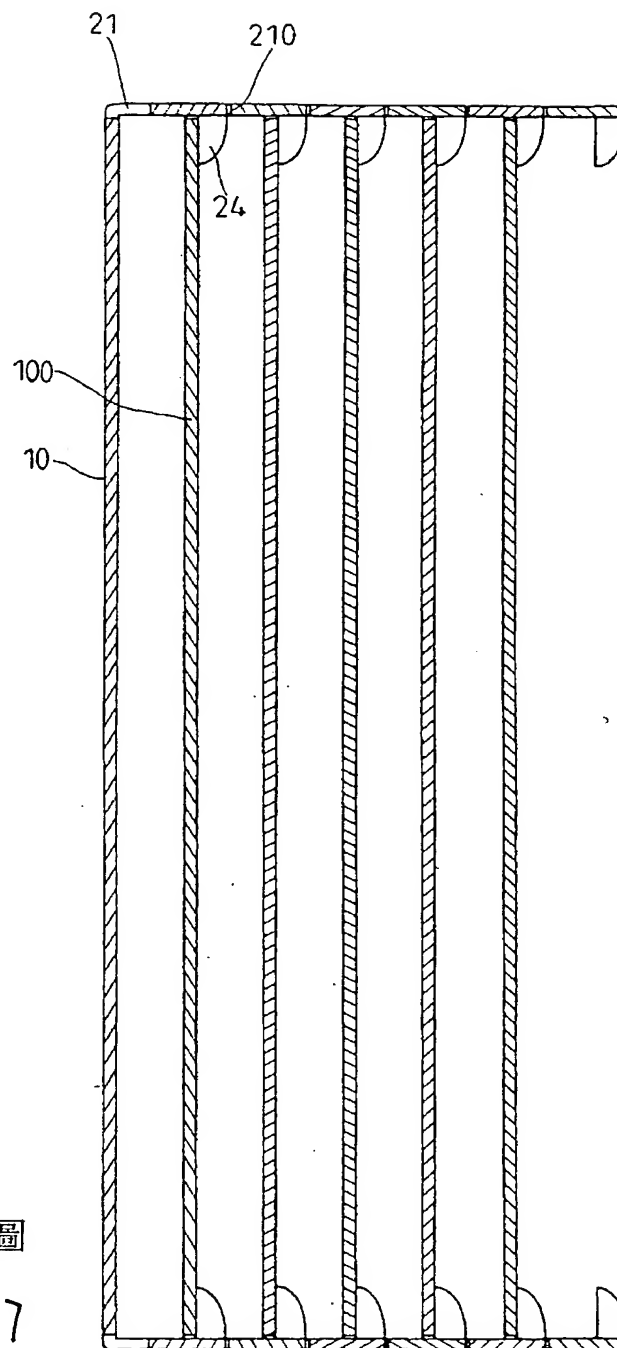


第五圖 Fig. 5

(4)



第六圖 Fig. 6



第七圖 Fig. 7